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## CLAIMS

- 1 1. A method comprising:
  - 2 receiving data representing current prices of options on a given
  - 3 asset,
  - 4 deriving from said data an estimate of a corresponding implied
  - 5 probability distribution of the price of said asset at a future time, and
  - 6 making information about said probability distribution available
  - 7 within a time frame that is useful to investors.
- 1 2. The method of claim 1 in which the data represent a finite number
  - 2 of prices of options at spaced-apart strike prices of the asset, and also
  - 3 including
  - 4 calculating a set of first differences of said finite number of prices
  - 5 to form an estimate of the cumulative probability distribution of the price
  - 6 of said asset at a future time.
- 1 3. The method of claim 2 also including
  - 2 calculating a set of second differences of the finite number of
  - 3 strike prices from the set of first differences to form an estimate of the
  - 4 probability distribution function of the price of said asset at a future time.
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- 1 4. A method comprising:
  - 2 receiving data representing current prices of options on a given
  - 3 asset,

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4 deriving from said data an estimate of a corresponding implied  
5 probability distribution of the price of said asset at a future time, and  
6 providing a real-time data feed containing information based on  
7 said probability distribution.

1 5. A method comprising:

2 providing a graphical user interface for viewing pages containing  
3 financial information related to an asset; and

4 when a user indicates an asset of interest, displaying probability  
5 information related to the price of the asset at a future time.

1 6. A method comprising:

2 enabling a user to identify an asset of interest, the asset being one  
3 for which data representing current prices of options on the asset are  
4 available,

5 deriving from said data an estimate of a corresponding implied  
6 probability distribution of the price of said asset at a future time, and

7 providing a display of a probability distribution of prices of the  
8 asset at future times.

1 7. A method comprising:

2 enabling a user to indicate a future time and to identify an asset of  
3 interest, the asset being one for which data representing current prices of  
4 options on the asset are available, and

5 displaying to the user a distribution of the probability that the asset  
6 will reach prices within a range of prices at the future time.

- 1 8. A method comprising:
- 2 receiving data representing current prices of options on a given
- 3 asset, the options being associated with spaced-apart strike prices of the
- 4 asset at a future time,
- 5 the data including shifted current prices of options resulting from a
- 6 shifted underlying price of the asset, the amount by which the asset price
- 7 has shifted being different from the amount by which the strike prices are
- 8 spaced apart, and
- 9 deriving from said data an estimate of a quantized implied
- 10 probability distribution of the price of said asset at a future time, the
- 11 elements of the quantized probability distribution being more finely
- 12 spaced than for a probability distribution derived without the shifted
- 13 current price data.
- 1 9. A method comprising
- 2 receiving data representing current prices of options on a given
- 3 asset, the options being associated with spaced-apart strike prices of the
- 4 asset at a future time,
- 5 deriving from said data an estimate of an implied probability
- 6 distribution of the price of said asset at a future time, the mathematical
- 7 derivation including a smoothing operation, and
- 8 making information about said probability distribution available
- 9 within a time frame that is useful to investors.
- 1 10. The method of claim 9 in which the smoothing operation is
- 2 performed in a volatility domain.

1 11. The method of claim 9 in which the smoothing operation is  
2 performed in the domain of the option prices or in the domain of the  
3 probability distribution information.

1 12. A method comprising:

2 receiving data representing current prices of options on a given  
3 asset, the options having strike prices at future dates,

4 deriving a volatility for each of the future dates in accordance with  
5 a predetermined option pricing formula that links option prices with strike  
6 prices of the asset;

7 generating a smoothed and extrapolated volatility function;

8 and using the volatility information to generate information within  
9 a time-frame that is useful for investors.

1 13. The method of claim 12 in which the volatility function is  
2 extrapolated to a wider range of dates than the future dates.

1 14. The method of claim 12 in which the volatility function is  
2 extrapolated to strike prices other than the strike prices of the options.

1 15. The method of claim 9 also including

2 generating a smoothed volatility function using only data that are  
3 reliable under a predetermined measure of reliability.

1 16. The method of claim 9, further comprising:

2 generating an implied volatility function formula having a  
3 quadratic form with two variables representing a strike price and an  
4 expiration date;

5 wherein coefficients of the implied volatility function formula are  
6 determined by applying regression analysis to approximately fit the  
7 implied volatility function formula to each of the implied volatilities.

8 17. A method comprising:

9 receiving data representing current prices of options on assets  
10 belonging to a portfolio,

11 deriving from said data an estimate of an implied multivariate  
12 distribution of the price of a quantity at a future time that depends on the  
13 assets belonging to the portfolio, and

14 making information about said probability distribution available  
15 within a time frame that is useful to investors.

1 18. A method comprising:

2 receiving data representing values of a set of factors that influence  
3 a composite value,

4 deriving from said data an estimate of an implied multivariate  
5 distribution of the price of a quantity at a future time that depends on  
6 assets belonging to a portfolio, and

7 making information about said probability distribution available  
8 within a time frame that is useful to investors.

1 19. The method of claim 18 in which the mathematical derivation  
2 includes generating a multivariate probability distribution function based  
3 on correlations among the factors.

1 20. A graphical user interface comprising:

2 a user interface element adapted to enable a user to indicate a  
3 future time;

4 a user interface element adapted to show a current price of an  
5 asset; and

6 a user interface element adapted to show the probability  
7 distribution of the price of the asset at the future time.

1 21. A method comprising:

2 continually generating current data that contains probability  
3 distributions of prices of assets at future times,

4 continually feeding the current data to a recipient electronically,  
5 and

6 the recipient using the fed data for services provided to users.

1 22. A method comprising:

2 receiving data representing current prices of options on assets  
3 belonging to a portfolio,

4 receiving data representing current prices of market transactions  
5 associated with a second portfolio of assets, and

6 providing information electronically on the probability that the  
7 second portfolio of assets will reach a first value given the condition that  
8 the first portfolio of assets reaches a specified price at a future time.

1 23. A method comprising:

2 receiving data representative of actual market transactions

3 associated with a first portfolio of assets;  
 4 receiving data representative of actual market transactions  
 5 associated with a second portfolio of assets;  
 6 providing information on the expectation value of the price of first  
 7 portfolio of assets given the condition that the second portfolio of assets  
 8 reaches a first specified price at a specified future time through a network.

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1 24. A method comprising

2 evaluating an event defined by a first multivariate expression that  
 3 represents a combination of macroeconomic variables at a time T, and

4 estimating the probability that a second multivariate expression  
 5 that represents a combination of values of assets of a portfolio will have a  
 6 value greater than a constant B at time T if the value of the first  
 7 multivariate expression is greater than a constant A.

1 25. The method of claim 24 in which the probability is estimated using  
 2 Monte Carlo techniques.

1 26. A method comprising

2 defining a regression expression that relates the value of one  
 3 variable representing a combination of macroeconomic variables at time T  
 4 to a second variable at time T that represents a combination of assets of a  
 5 portfolio, and

6 estimating the probability that the second variable will have a  
 7 value greater than a constant B at time T if the value of the first variable is  
 8 greater than a constant A at time T, based on the ratio of the probability of

9     x being greater than A under the regression expression and the probability  
10    of x being greater than A.

1      27.      A method comprising

2 defining a current value of an option as a quadratic expression that  
3 depends on the difference between the current price of the option and the  
4 current price of the underlying security, and

5 using Monte Carlo techniques to estimate a probability distribution  
6 of the value at a future time T of a portfolio that includes the option.

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